Appendix A

Summary of DOE Order 5000.3B Occurrence Reporting and Processing of Operations Information

Contents

Purpose and Scope This Order establishes a system for reporting and processing information about reportable occurrences taking place at DOE-owned or -operated facilities. The system facilitates both appropriate corrective action and a learning process whereby DOE personnel and contractors can work to prevent or minimize such occurrences in the future.

The provisions of this Order apply to Departmental Elements and contractors performing work for. the Department as provided by law and/or contract and as implemented by the appropriate contracting officer. Reportable occurrences include emergencies, unusual occurrences, or off-normal occurrences related to safety, health, security, property, operations, or environment.

Specifically excluded from this Order arc: (1) activities regulated by the Nuclear Regulatory Commission (NRC) or a state under an agreement with the NRC; (2) reporting of Major Electric Utility Systems Emergencies by the Power Marketing Administration as prescribed in 10 CFR 205, 350-354; (3) the Naval Nuclear Propulsion Program; (4) reporting required by other DOE Orders for normal recordkeeping purposes; and (5) additional reporting as required by external regulatory agencies.

Policy DOE's policy is to ensure:

- Timely identification, categorization, notification, and reporting to DOE management of all reportable occurrences at DOE-owned or -operated facilities
- Timely evaluation and implementation of appropriate corrective actions
- Maintenance of a central DOE Occurrence Reporting and Processing System (ORPS) data base containing all unclassified occurrence reports
- Review of reportable occurrences to assess significance, root causes, generic implications, and the need for corrective action
- Dissemination of occurrence reports to DOE operations and facilities to prevent similar occurrences.

Occurrence Categorization, Notification, and Reporting Requirements

Categorization of reportable occurrences must be made as soon as practical and, **in all cases, within 2 hours of identification.** For full guidance on categorization, see Attachment I to DOE Order **5000.3B,** "Categorization of Reportable Occurrences." If categorization is not clear, then the occurrence must be categorized at the higher level and amended once sufficient information is available. Any changes in categorization must be documented and justified in a IO-Day Occurrence Report and submitted **before** the close of the next business day from the time of recategorization (not to exceed 80 hours). The three categories of reportable occurrences are:

- **Emergencies—These are** the most serious occurrences and require an increased alert status for on-site personnel and, in specified cases, for off-site authorities. The detailed definitions, criteria, and classifications of emergencies and appropriate responses are provided in DOE Order **5500.2B,** 'Emergency Categories, Classes, and Notification and Reporting Requirements" (April **30,1991).** See Section **7.a.(1)** of DOE Order **5000.3B** for the types of occurrences that are to be categorized as emergencies.

- **Unusual Occurrences—These** are non-emergency occurrences that have significant actual or potential impacts on safety, environment, health, security, or operations. See Section **7.a.(2)** of DOE Order **5000.3B** for the types of occurrences that are to be categorized as unusual occurrences.

- **Off-Normal Occurrences—These** are abnormal or unplanned events or conditions that adversely affect, potentially affect, or are indicative of degradation in the safety, security, environmental or health protection performance, or operation of a facility. See Section **7.a.(3)** of DOE Order **5000.3B** for the types of occurrences that are to be categorized as off-normal occurrences.

Oral and documented notifications of reportable occurrences must provide clear, succinct descriptions of the occurrence, operating conditions of the facility at the time of the occurrence, immediate actions taken in response, and results of those actions, if known. For each reportable occurrence, a Notification Report must be prepared and submitted before the close of the next business day from the time of categorizations (not to exceed 80 hours). Oral notification requirements differ according to the category of the occurrence:

- In the case of emergencies, oral notification to DOE and off-site authorities must be made within 15 minutes of categorization. All oral notification requirements must be satisfied by following DOE Order **5500.2B.**

- In the case of unusual occurrences, oral notification to DOE must be made as soon as sufficient information is obtained to indicate the general nature and extent of the occurrence but, in all cases, within 2 hours of categorization.

- In the case of off-normal occurrences, oral notification to DOE is not mandatory.

In addition to initial oral notifications, follow-up oral notification must be made to DOE for any of the following:

- Any further degradation in the level of safety of the facility or other worsening conditions, including those that require the declaration of any emergency class as defined in DOE Order **5500.2B,** if such a declaration has not been previously made.

- Any change from one emergency class (as defined in DOE Order **5500.2B)** or category (as defined by DOE Order **5000.3B)** to another.

- Termination of emergency.

An Occurrence Report must be prepared and submitted for all reportable occurrences, according to instructions provided in Attachment II of DOE Order **5000.3B,** "Instructions for Completing an Occurrence Report." The submission of Occurrence Report information is required as follows:

- The Notification Report must be prepared and submitted as soon as practical, but, in all cases, before the close of the next business day from the time of categorization (not to exceed 80 hours).

- The 10-Day Occurrence Report must be prepared and submitted within 10 working days of categorization, utilizing the most recent information available.

- The 10-Day Update Report must be prepared and submitted when significant new information is available to update the 10-Day Occurrence Report.

- The Final Occurrence Report must be prepared and distributed when the cause of the reportable occurrence has been analyzed, the root cause and contributing causes have been determined, corrective actions have been determined and scheduled, and lessons learned have been identified.

For complete guidance on classification requirements, see Section 7.e. of DOE Order 5000.3B. The basic rule is that Occurrence Reports originating from facilities where classified or Unclassified Controlled Nuclear Information (UCNI) operations are conducted, or where classified or UCNI information may be generated, must be reviewed and sanitized by an Authorized Classifier or Reviewing Official prior to distribution.

Implementation Requirements

Implementation of the occurrence categorization and notification process is explained in Section 8.a of DOE Order 5000.3B. Generally, when a reportable occurrence takes place, the following steps must be taken:

- The facility staff and operators must identify and promptly notify the Facility Manager of abnormal events and conditions.

- Appropriate immediate response(s) must be taken by operations personnel to stabilize or return the facility/operation to a safe condition.

- The Facility Manager must be available at all times.

- The Facility Manager must categorize the occurrence.

- For oral notification, the Facility Manager must simultaneously contact the DOE Facility Representative and the Headquarters (HQ) Emergency Operations Center (EOC) or the local Field/Site EOC in order to establish direct communications links with the DOE Program Manager and any other necessary program staff.

- The Program Manager must notify his or her Program Secretarial Officer (PSO) of all emergency and unusual occurrences. For emergencies, the PSO must notify the Assistant Secretary for Environment, Safety and Health. For all other occurrences, the PSO must use judgment as to notification of these Departmental Elements.

- The DOE Facility Representative must notify the appropriate Head of the Field Organization of Reportable Occurrences.

- During the entire process of notification and reporting, the DOE Facility Representative and Program Manager must use the current management chain established for the line organization in providing program direction to the contractor.

- The Facility Manager must prepare and submit the Notification Report and distribute it to the DOE Facility Representative and Program Manager before the close of the next business day from the time of categorization (not to exceed 80 hours). When an unclassified Notification Report is submitted using the computerized DOE ORPS data base, the distribution requirement is automatically satisfied.

Implementation of the Occurrence Report and follow-up process is explained in Section 8.b. of DOE Order 5000.3B. Generally, the process is as follows:

- For every reportable occurrence, the Facility Manager must determine and document in the Occurrence Report the significance, nature, and extent of the event or condition, its causes, and corrective actions to be taken.

- The Facility Manager must submit a 10-Day Occurrence Report

- The Facility Representative, in consultation with the Program Manager, should (but is not required to) provide the Facility Manager with an assessment of the occurrence, the initial and proposed corrective actions, the follow-up actions by contractors, and any other DOE action taken since the occurrence.

- The Final Occurrence Report must be prepared by the Facility Manager and submitted to the Facility Representative within 45 days of categorization. See Section 8.b. of DOE Order 5000.3B for instructions concerning late submissions.

- The Final Occurrence Report must be reviewed and approved by the Facility Representative within 7 working days of receipt and forwarded to the Program Manager, who must review and approve it within 14 days of receipt. See Section 8.b. of DOE Order 5000.3B for instructions concerning disapproval.

- The distribution requirement for the 10-Day and Final Occurrence Reports are set forth in section 8.b. of DOE Order 5000.3B.

- The Facility Representative and the Program Manager must monitor the Facility Manager's evaluation and advise management of their fmdings.

- If the Facility Manager or Program Manager identify an unresolvable issue, the Program Manager must elevate it to the PSO and, if necessary, to the Secretary for resolution and direction.

- Contractors must maintain the ORPS, including incomplete Occurrence Reports and incomplete corrective actions.

Utilization of reportable occurrence information in the ORPS is explained in Section 8.c. of DOE Order 5000.3B.

Implementation procedures that ensure the fulfillment of the requirements of DOE Order 5000.3B must be established and approved under the purview of PSOs for facilities under their cognizance. The procedures must include:

- Responsibilities of the contractor, field organization, Headquarters program office, and the HQ EOC

- Categorization, notification, and reporting requirements (based on Attachment I to DOE Order 5000.3B) for each facility

- A listing (by reference) of the devices/systems that arc considered to be class A/B equipment and all other facility specific reporting requirements based on Attachment I to DOE Order 5000.3B

PSOs must take action to have training programs in occurrence reporting and processing of operations information established for both DOE and contractor personnel at facilities under their cognizance. See Section 8.e. of DOE Order 5000.3B for instructions for the content of these training programs.,

PSOs may formally request the Secretary of Energy to grant permanent exemptions to the reporting requirements of DOE Order 5000.3B after obtaining the concurrence of the Assistant Secretary for Environment, Safety and Health (EH-1). Temporary exemptions to the reporting requirements of DOE Order 5000.3B, up to 1 year in duration, may be granted by the responsible PSO. Prior to approval of the temporary exemptions by the PSO, EH-1 must be notified in a timely manner in order to discharge their assigned responsibilities.

All supporting information and documentation pertaining to each Occurrence Report (e.g., graphs, analyses, etc.) must be retained in accordance with DOE Order 1324.2A.

The implementation schedule for DOE Order 5000.3B is contained in Section 8.h. of the Order.

Responsibilities and Authorities

For complete guidance regarding the responsibilities and authorities established by DOE Order 5000.3B, see Section 9 of the Order. The following Departmental Elements have been assigned responsibilities and authorities:

- Assistant Secretary for Environment, Safety and Health (EH-1),
- Program Secretarial Officers (PSOs),
- Program Managers,
- DOE Heads of Field Organizations,
- DOE Facility Representatives, and
- Director of Naval Nuclear Propulsion Program.

Appendix B

Action Memorandum Outline and Sample Model for DOE Removal Actions

Contents

Action Memorandum Outline

I. Purpose

II. Site Conditions and Background

A. Site Description

1. Removal site evaluation
2. Physical location
3. **Site** characteristics
4. Release or threatened release into the environment of a hazardous substance, or **pollutant,** or contaminant
5. NPL status
6. Maps, pictures, and other graphic representations

B. Other Actions

1. Previous actions
2. Current actions

C. State and Local Authorities' Roles

1. State and local actions to date
2. Potential for continued state/local response

III. Threats to Public Health or Welfare or the Environment, and Statutory and Regulatory Authorities

A. Threats to Public Health or Welfare

B. Threats to the Environment

IV. Proposed Actions and Estimated Costs

A. Proposed Actions

1. Proposed action description
2. Contribution to remedial performance
3. Description of alternative technologies
4. Engineering Evaluation/Cost Analysis (EE/CA)
5. Applicable or relevant and appropriate requirements (ARARs)
6. Project schedule

B. Estimated Costs

V. Statutory Limits on Removal Actions

VI. Expected Change in the Situation Should Action be Delayed or Not Taken

VII. Outstanding Policy Issues

VIII. Recommendation

Attachments

Sample Model for DOE Removal Actions

MEMORANDUM

DATE: Month, day, year

SUBJECT: Request for a Removal Action at _____ Facility, City, State

FROM: Name of ERPM

TO: **[TBD]**

THRU: **[TBD]**

I. PURPOSE Provide a statement of purpose indicating the type of action being requested (e.g., approval of a removal action and/or exemption to statutory limits on removal actions) and the facility name and location.

Example: – ***The purpose of this Action Memo is to request and document approval of the proposed removal action described herein for the Facility, City, State.***

II. SITE CONDITIONS AND BACKGROUND Identify the category of removal (i.e., emergency, time-critical, non-time-critical). Provide an overview of the site's history and current characteristics. Indicate the nature of the contamination and describe the information obtained during the removal site evaluation. Ensure that the information contained in this section provides an accurate assessment of current site conditions, using relevant supporting data where possible.

A. Site Description

1. Removal site evaluation

. Discuss the history of the incident or release, including the time, date and location of the incident, the type of incident that occurred, and the facts concerning the discovery of the release.

Examples:
- ***Train derailment resulted in tank rupture and vapor release.***
- ***A storage lagoon in the south corner of the site overflowed due to heavy rains.***
- ***Drums washed up on the beach and were reported by facility personnel.***

- List all of the incident's key problem areas

  Examples: – ***Stacked drums***
  – ***Bulked liquids***
  – ***Lagoons***
  – ***Contaminated soils.***

2. Physical location

- Describe the incident's physical location in terms of surrounding land use, population size, and distances to nearest populations and other reference points.

  Examples: – ***A school is within 1/4 mile of the site.***
  There are 1,000 residences within I mile of the site, 10 of which are adjacent.
  The area is mainly suburban residential with some light industrial areas.

- Describe adjacent areas in terms of vulnerable or sensitive populations, habitats, and natural resources.

  Example: – ***The site is adjacent to wetlands and a tributary to the Red River flows nearby.***

3. Site characteristics

- Describe the current use of the release area, the nature and type of facility, and activities that may have or are currently contributing to the incident.

  Examples: – ***The site was a sanitary landfill that accepted industrial wastes.***
  – ***The site has been used for an uncontrolled dump of PCB wastes.***
  There is an operating metal fabrication facility on the site.

- Indicate whether this is the first removal at the facility or a restart. If the removal is a restart, previous actions should be described in section II B of the Action Memorandum.

4. Release or threat of release into the environment of a hazardous substance, or pollutant or contaminant

- List materials known on-site and whether they are hazardous substances as defined by section 101(14) of CERCLA, or pollutants or contaminants as defined by section 101(33) of CERCLA.

- Provide estimates of the quantities involved, identify the source of information, and refer to sampling and analytical data.

  Examples: - ***Site records and conversations with the facility manager indicate that 10 drums of PCB-contaminated sludge are buried on-site.***
  - ***Preliminary sampling has found drinking water to exceed the removal action level for toluene.***

- Highlight substances of critical concern such as PCBs and dioxins (if the information is presented in chart form, identify the substance, quantity, location, and any existing standards for comparison). Explain all data presented.

- Identify any unique characteristics of the materials involved, such as mixed or radioactive wastes.

- Describe how past, present, or future releases have occurred or will occur; observable or probable migration route(s) of contaminants; and the basis for this determination. Common routes of exposure include fire/explosion and resulting emissions, human contact, and soil contamination that could lead to ingestion or contamination of ground or surface water. Discuss site features or characteristics, weather conditions, human events, or other conditions that would either cause, spread, or accelerate the release of materials. Describe the rate of release and physical properties of the substance that influence or determine the form and speed at which it travels. Support these descriptions with documentation, as appropriate.

  Examples: - ***Substantial fire/explosion hazard and fumes would drift into nearby neighborhood.***
  - ***Transformer lying on its side has been drained of PCB-contaminated oil; surrounding surface soil is heavily stained, and is readily accessed by facility personnel.***
  - ***Vegetation on the north bank of the stream, approximately 50 yards below the ruptured tank, is dead.***

5. NPL status

- State whether or not the site is listed on the NPL. If it is an NPL site, indicate whether or not remedial activities are in progress or when remedial action is expected (note that contribution to remedial performance is discussed in the "Proposed Action" section of the Action Memorandum). If it is not an NPL site, note whether or not the site has been proposed for the NPL.

6. Maps, pictures, and other graphic representations

- Refer to attached pictures, diagrams, maps, and/or sketches if they substantiate the conditions at the site and strengthen the background section of the memorandum and provide them as an attachment.

B. Other Actions to Date

1. Previous actions

- Describe any actions (including community relations) that have been undertaken in the past and not previously discussed. Include both CERCLA and any other responses conducted previously, such as spill responses under section 311 of the Clean Water Act or private party cleanup attempts.
- Indicate the dates, costs, and effectiveness of these actions.

2. Current actions

- Describe any activities that currently are being performed but have not been previously discussed. Indicate the dates, costs, and effectiveness of these activities.
- Discuss how proposed DOE actions will relate to current activities described above.

C. State and Local Authorities' Roles

1. State and local actions to date

- Indicate whether state and/or local governments requested DOE assistance and the name of specific agencies/officials making the request.

Example: – The State Department of Natural Resources sent a letter to DOE describing threats posed by leaking aboveground storage tanks at ABC site.

- Summarize any "first responder" or other actions these or other agencies have taken to protect public health and the environment. Note the date and effectiveness of such actions.
  Examples: – *Local government evacuated a one-square mile area.*
  – *Policemen were posted on February 10 to restrict public access, and no further access has occurred.*

- Indicate state/local government cooperation in assessing the release/threat, and whether state/local personnel remain at the site.

2. Potential for continued state/local response

- Describe actions state/local government personnel are taking and their future roles.
  Examples: – *Site security provided by state highway patrol.*
  – *Water main hookups to be installed by local water authority.*

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Explain how this incident meets the requirement of a threat to public health or welfare or a threat to the environment[1] for initiating a removal. For the two sections below, discuss only those threats that will be addressed by the removal action, beginning with the most serious, and relate the discussion to appropriate statutory and regulatory authorities.

A. Threats to Public Health or Welfare

- Detail the threats to public health or welfare as they relate to the criteria (provided below) from section 300.415(b)(2) of the NCP. Attach and refer to or incorporate any final health consultations or site-specific health advisories, or other health risk advice, and explain any deviations from final ATSDR documents.

1 CERCLA section 104(a) authorizes removal responses "whenever (A) any hazardous substance is released or there is a substantial threat of such a release into the environment, or (B) there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare." Note that removals are not allowed under section 104(a)(3) of CERCLA when there is a release or threat of release: of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found; from products which are part of the structure of, and result in exposure within, residential buildings or business or community structures; or into public or private drinking water supplies due to deterioration of the system through ordinary use. DOE may respond, however, to these situations when an emergency exists and no other authority can respond in a timely manner.

Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations or the food chain. Identify substances of concern, realistic exposure scenarios, and how the levels of hazardous substance(s) exceed site-specific action level(s), and/or acute, and if appropriate, chronic toxicological standards. Tailor the description to the concentrations of contaminants on the site and receptors. Describe any reports of human health effects (e.g., illness, injury, or death) that appear linked to the exposure and describe any effects of human exposure.

Examples:

- ***Volatilization of hazardous substances contained within the deteriorating building threatens surrounding residents with airborne exposure.***
- ***It is estimated that residents within a 2-mile radius may be exposed to toxic fumes at substantial levels in the event of an explosion/fire.***
- ***Studies have identified nausea and respiratory dysfunction as the primary health effects.***

Actual or potential contamination of drinking water supplies. Identify the substances of concern, realistic exposure scenarios explaining how the water supply is threatened, and the immediacy and gravity of the threat. Describe the location of the affected aquifer and its use. Indicate if the numeric removal action levels for drinking water are exceeded in the aquifer or site-specific factors otherwise indicate that a significant health threat exists.

Examples:

- ***Degreasers and other solvents dumped on the ground have migrated through the soil, contaminating 14 wells downgradient of the site.***
- ***Samples taken within a 2-block radius showed the removal action level for barium is exceeded at the tap in four houses.***

Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release. Identify the substances of concern and estimate their quantities; and describe the number, type, and conditions of containers. Provide realistic exposure scenarios based upon site conditions and the proximity of sensitive or nearby populations. Describe the-effects of human exposure.

Examples: – ***The chemicals are contained in 2 leaking 5,000 gallon pressure vessels located on deteriorating concrete pads.***

There are approximately 10 uncovered drums surrounded by a partially collapsed chain-link fence on the site. An elementary school is located within 1/2 mile.

– High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate. Identify the substances of concern, estimated amounts, realistic pathways and exposure scenarios, and how the levels exceed standards. Describe the soil characteristics, the extent of the contamination, and factors that may affect migration.

Examples: – ***The hazardous substances were dumped in a 20-ft. square area and have penetrated the top soil to a depth of approximately 1 foot. The aquifer is 6 feet below the surface and contamination would create a substantial plume.***

The residue from the lagoon lies on top of a hardpacked clay surface, with contaminants migrating from the site in stormwater runoff to a nearby river used for drinking water.

Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released. Describe the conditions of concern and provide an estimate of the likelihood of their occurrence. Explain how these conditions would affect exposure scenarios and migration.

Examples: – ***Spring floods carried an estimated 20 barrels and more than 50 drums of volatile organics into the Green River, the drinking water source for more than 5,000 people. Further flooding is predicted.***

– ***Before containment measures are implemented, heavy summer cloudbursts may wash pollutants across the concrete yard and into municipal storm sewers.***

– Threat of fire or explosion. Identify the substances of concern, and realistic exposure scenarios including the gravity and immediacy of the threat. Be specific about the number of people exposed, the proximity of sensitive or nearby populations, and the geographic area affected.

Examples: – ***The site contains nearly 30 drums of non-compatible volatile organics stored next to each other. A school is less than 1/2 mile away.***

Vandals have set three fires on the property adjacent to the drum storage area, requiring evacuation of facility personnel.

– Other situations or factors that may pose threats to public health or welfare.

B. Threats to the Environment

- Detail the threats to the environment as they relate to the criteria provided below from section 300.415(b)(2) of the NCP (discuss only those categories of threats that apply to existing or potential conditions):

  Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby animals or the food chain. Identify the substances of concern, probable exposure pathways, evidence of prior animal exposure (either directly or through the food chain), and results of any available analyses. Relate the information to the contaminants of concern and the known or probable receptors. Report any known illness, injury, or death linked to the exposure.

  Examples:
  - ***Significant levels of lead were found in crayfish and sediment samples taken in Black Creek downstream of the storm sewer, which carries contaminated runoff from the site.***
  - ***Large fishkill (4 million reported in 1986); potential repeat if 2-million gallon lagoon overflows again, releasing sludges and supernatant liquid.***

  - Actual or potential contamination of sensitive ecosystems. Identify the substances of concern, contaminant migration routes, and the immediacy and severity of the threat to sensitive ecosystems. Describe any ecosystem effects that appear to be linked to contaminant exposures.

    Examples:
    - ***Site is partly located in a wetland. Hazardous substances kill algae, which are a critical part of the ecosystem. State has documented ground- water contamination.***
    - ***State Department of Natural Resources reports high levels of mercury and other heavy metals in fish in a nearby recreational lake, which receives stormwater runoff from this facility.***

Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release. Describe the number, type, and condition of containers and identify the substances they contain. Estimate quantities of hazardous substances. Describe the known effects of these substances on plant and animal life.

Examples:

- ***Approximately 800 drums containing volatile organics, about half of which are damaged, are located in the southwest corner of the facility property. Vegetation in the vicinity of the drum site is dead.***
- ***Pesticide residues are present in many open containers on the landfill surface. Deer have been observed walking through the landfill area and grazing nearby. These pesticides are toxic at these levels to deer.***

- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate. Identify the substances of concern and the source(s) of any releases to the soil, estimate the extent of contamination, and describe probable exposure scenarios. Describe the soil characteristics and factors that may affect migration.

Examples:

- ***PCB contaminant levels in the soil at the facility exceed 200 ppm. Park land is adjacent. Contaminants would be toxic to animals and humans.***
- ***Fugitive dust has been observed escaping the site during periods of high wind and moving towards the vicinity of a trout stream less than 2 miles downwind.***

Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released. Describe the conditions of concern and the likelihood of their occurrence. Explain how these conditions contribute to contaminant migration or to likely exposures to plant or wildlife populations. Describe recurring weather patterns that create or aggravate threats to the environment.

Examples: – ***Snow melt runs through the drainage area each spring, depositing tailings in Rush Creek, which is used for recreational fishing. Record snowfalls were reported in January and February.***

Heavy rains are expected to continue, which could result in a second lagoon overflow into the adjacent wetland when migratory bird populations are at their peak.

– Threat of fire or explosion. Identify the substances of concern and the immediacy and severity of the threat. Describe any illness, injury, or death to flora or fauna resulting from fires or explosions. Describe the geographic area affected and any special environmental concerns.

Examples: – ***Hunters using the grounds of the abandoned chemical reclamation facility for target practice detonated discarded munitions, creating afire that devastated more than 4 acres of the wildlife management area and killed an unknown number of birds and other wildlife.***

– ***Reactive chemicals are stored throughout the warehouse, and in some instances are exposed to the elements, creating potential for explosion and fire. Park land is approximately 1,500 yards from the south wall of the warehouse.***

– Other situations or factors that may pose threats to the environment.

IV. PROPOSED ACTIONS AND ESTIMATED COSTS

Explain proposed and alternative actions, and estimated costs for both proposed and alternative actions, and the project schedule. State how the action addresses the threat. Explain why obvious alternatives were determined not to be feasible.

Example: – ***Removal of waste solvents and off-site RCRA disposal is the only feasible solution for mitigating threats posed by the situation. Site stabilization without disposal would provide only a temporary solution to the threats posed by the site.***

A. Proposed Actions

1. Proposed action description

- Describe the specific tasks involved in the proposed response to the public health, welfare, and environmental threats discussed in section III of the Action Memorandum. Be sure to describe the full extent of the removal, including ultimate disposition of contaminants, and explain what will be left at the site when the removal is completed. Discuss the rationale for choosing the option and provide supporting data for the decision; state why the proposed actions are appropriate for this situation in light of the threats and explain how they achieve timely response and protection of human health and the environment. Describe the technical feasibility and probable effectiveness of the proposed action.

Examples: – ***Installation of an interceptor well will block the migration of contaminants and greatly reduce the threat of contaminating the stream bordering the site. Contaminated water will be treated on-site and discharged into the stream.***

– ***Excavation of the contaminated soil and disposal in a RCRA-permitted landfill will mitigate the public health threat posed by direct human contact and inhalation of airborne particles.***

- State whether any further information is needed before all response actions can be decided and the approximate date when a final decision will be reached.

  Example: – ***Further sampling to determine the extent of soil contamination will be completed within*** 30 ***days.***

- Ensure that the extent of contamination has been or will be verified by sampling and properly documented.

  Examples: – ***DOE will use a split sampling technique.***
  Water samples will be analyzed daily using automated sampling techniques.

- Describe how any vulnerable or sensitive populations, habitats, or natural resources identified in section II A might affect removal activities.

  Example: – ***Location in a floodplain might hamper removal activities in spring.***

- Where known and appropriate, list other uncertainties affecting implementation of the proposed action.

  Example: – ***Steep slope of site may prevent permanent capping.***

- Discuss the need for and feasibility of relying on institutional controls at the state or local level, if applicable.

  Examples: – ***Deed restrictions are needed to prevent incompatible future activities.***
  – ***Prohibitions on drilling new water wells can be instituted at the County level.***

- Describe available information concerning off-site disposal, such as the estimated quantity or type of waste(s) requiring off-site treatment or disposal, the facility selected, and the extent to which the substance can be treated.

  Examples: – ***Five drums containing an unidentified mixture of solvents will require off-site disposal.***
  – ***Arrangements will be made for disposal of the 300 tons of contaminated soil at the ABC RCRA-approved facility.***

- Discuss the need for provision of PRSC and note whether the state or local government has agreed to provide for PRSC, if applicable. Identify any other agreement that exists to provide PRSC.

  Example: – ***Post-removal site control activities will be managed by the state of _____.***

- Indicate if the scope of proposed work has changed as a result of public comment on the EE/CA for non-time-critical removals.

  Example: – ***Further drinking water sampling will be conducted in response to comments received at the public meeting.***

- Identify cross-media relationships and potential adverse impacts associated with intermediate steps.

  Examples: – ***Excavation of soils from highway shoulder will require traffic diversion and will be coordinated with local police.***

  – ***Local traffic and noise levels will increase during the response; therefore, hazardous substances will not be moved off-site during school bus operating hours.***

2. Contribution to remedial performance

. Discuss how the proposed actions will, to the extent practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or threat of release. For this discussion, document the conclusions resulting from consideration of the following questions:

– What is the long-term cleanup plan for the site? For sites with signed Records of Decision (RODs), briefly describe the remedial action selected. For proposed and final NPL sites where no remedial action has been selected, identify a range of feasible alternatives based upon a review of existing site information and professional judgment. For non-NPL sites where remedial plans are unknown or not anticipated, state that the proposed action will not impede future responses based upon available information.

- Which threats will requite attention prior to the start of the long-term cleanup if there is one? For proposed or final NPL sites, where remedial action is planned or likely, identify specific threats and explain why and how they must be addressed prior to long-term cleanup. For non-NPL sites with no long-term cleanup plans, refer to all threats meeting the NCP section 300.415(b)(2) removal criteria identified in section III of the Action Memorandum.

- How far should the removal action go to ensure that threats are adequately abated? For proposed or final NPL sites, where remedial action is planned or likely, explain (1) which threats must be abated entirely and which must be stabilized to protect public health, welfare, and the environment until a permanent remedy can be effected and (2) how abatement or stabilization is accomplished by the proposed actions. For non-NPL sites where there are no plans for long-term remedial action, the threats that meet the NCP removal criteria should be completely cleaned up.

  Is the proposed removal action consistent with the long-term remedy, if known? Describe how the removal contributes to, or is at least consistent with, the permanent remedy.

OR

Note that no further action is requited if the proposed removal action completes the cleanup, or if an emergency existed that precluded an analysis of how the removal related to long-term actions.

3. Description of alternative technologies

- Indicate what, if any, alternatives to land disposal have been considered. If an alternative technology is selected as the proposed action, provide an in-depth description in the "Proposed action description.*'

- Explain how the timely response and protection of human health and the environment would be achieved by each alternative technology.

  Examples: – ***Bioremediation techniques in conjunction with site stabilization will protect the surrounding environment in a timely manner.***

  – ***PCB incineration will effectively eliminate the threat to adjacent residences.***

- Explain how well each alternative technology meets the criteria of effectiveness, implementability, and cost.

  Examples: – ***Bioremediation would be less costly than other technologies, but its effectiveness on organic and heavy metal mixed contaminants is questionable.***

  – ***Recycling of the liquid wastes is the least expensive disposal option.***

4. EE/CA[2]

- Attach and refer to the EE/CA and the EE/CA Approval Memorandum for a discussion of alternative actions considered for non-time-critical removals (see Chapter 7).

- Attach and refer to the written response to significant comments on the EE/CA and supporting documentation in the administrative record.

5. Applicable or relevant and appropriate requirements (ARARs)

Federal

- List federal ARARs identified for the site that are deemed practicable, if any.

  Example: – ***Federal ARARs determined to be practicable for the site are the Clean Water Act, the Toxic Substances Control Act, and the Endangered Specks Act.***

- Explain, if necessary, that federal ARARs were not considered before removal activities were undertaken during an emergency situation.

2 **This section applies only to non-time-critical removals.**

State

- Describe efforts to identify state ARARs and indicate if state response has been timely.
  Example: – ***Received list of ARARs for site from state representatives within two weeks of request.***

- Where there has been time to assess state ARARs, list those which are deemed practicable.
  Example: – ***Proposed response will attain state water quality criteria.***

- Explain, if appropriate, that state ARARs were not identified or considered prior to removal initiation due to emergency circumstances.

6. Project schedule

- Specify the time needed to perform the preventative, stabilizing, and/or mitigative (cleanup) response actions to the threats posed by the site, and how quickly response activities can begin.

- Show when the state/local/PRP/remedial program commitment to provide PRSC takes effect, if applicable.

B. Estimated Costs

- Summarize the estimated total project ceiling with a breakdown of costs.

V. STATUTORY LIMITS ON REMOVAL ACTIONS

- Discuss whether the proposed removal action can be completed within the $2 million/l year statutory limits on removal actions. If the removal action is expected to exceed the statutory limits, give a rationale for an exemption.
  Examples: – ***The removal action can be performed within the statutory dollar and time limits. The activities are expected to be completed within 9 months of project initiation at a total project cost of $1,286,674.00.***
  – ***Removal action performance will require exceeding the statutory dollar limit. Total project cost is estimated to be $3,445,250.00. An exemption to the statutory limit is requested to ensure the removal action contributes to the remedial action planned for the site.***

Vi. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

- Describe any expected changes in the situation should action be delayed or not taken, such as changes in the scope or nature of contamination, increased threats, or the need for additional response actions. Include a worst-case scenario.

  Examples: - ***Contamination will most likely spread from the site to a nearby stream that serves as a municipal water supply.***
  - ***Delayed action will increase public health risks to the adjacent population through prolonged exposure to airborne contaminants.***

VII. OUTSTANDING POLICY ISSUES

- Discuss policy issues, if applicable, or state "None" if no policy issues are associated with the site.

  Examples: - ***The removal involves nationally significant and precedent-setting issues because it involves releases from consumer products on Indian Tribal lands.***
  - ***The site comprises two noncontiguous sites located 1/4 mile apart.***

VIII. RECOMMENDATION

- The following statement should appear in all Action Memoranda to document that the proposed response is in compliance with statutory and regulatory removal provisions:

  This decision document represents the selected removal action for the (name) site, in (location), developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the site.

- Provide an approval statement indicating that NCP removal requirements have been substantiated and stating the total project ceiling.

  Example: - ***Conditions at the site meet the NCP section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action. The total project ceiling if approved will be $1,363,400.00.***

- Include spaces for approval or disapproval signatures and dates.

ATTACHMENTS

- Append attachments referred to in the body of the Action Memorandum.

Appendix C

NCP Removal Action Factors

In all release or potential release situations, the Environmental Restoration Program Manager (ERPM) should consider the factors outlined in section 300.415 of the NCP to determine the appropriateness of taking a removal action. These factors are as follows:

- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants
- Actual or potential contamination of drinking water supplies or sensitive ecosystems
- Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release
- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate
- Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released
- Threat of fire or explosion
- The availability of other appropriate federal or state response mechanisms to respond to the release
- Other situations or factors that may pose threats to public health or welfare or the environment.

Section 300.415(d) of the NCP lists removal actions that address specific situations. In general, removal actions can include, but are not limited to, one or more of the following activities:

- Fences, warning signs, or other security or site control precautions—where humans or animals have access to the release

- Drainage controls, for example, run-off or run-on diversion—where needed to reduce migration of hazardous substances or pollutants or contaminants off-site or to prevent precipitation or run-off from other sources, for example, flooding, from entering the release area from other areas

- Stabilization of berms, dikes, or impoundments or drainage or closing of lagoons—where needed to maintain the integrity of structures

- Capping of contaminated soils or sludges—where needed to reduce migration of hazardous substances or pollutants or contaminants into soil, ground or surface water, or air

- Using chemicals and other materials to retard the spread of the release or to mitigate its effects—where the use of such chemicals will reduce the spread of the release

- Excavation, consolidation, or removal of highly contaminated soils from drainage or other areas—where such actions will reduce the spread of, or direct contact with, the contamination

- Removal of drums, barrels, tanks, or other bulk containers that contain or may contain hazardous substances or pollutants or contaminants—where it will reduce the likelihood of spillage; leakage; exposure to humans, animals or food chain; or fire or explosion

- Containment, treatment, disposal, or incineration of hazardous materials—where needed to reduce the likelihood of human, animal, or food chain exposure

- Provision of alternate water supply—where necessary immediately to reduce exposure to contaminated household water and continuing until such time as local authorities can satisfy the need for a permanent remedy.